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MOBILE DATA ACQUISITION DEVICE FOR PROCESSING DELIVERIES

This invention relates to a mobile data acquisition device to process deliveries and comprising a reader reading machine-readable data apposed to the objects being delivered and an input system receiving data identifying the objects' recipients.

Such mobile data acquisition devices used for delivery processing are known in the prior art especially as regards courier, express and parcel services. These known mobile data acquisition devices are used by the delivery enterprises to optimize their logistics. Illustratively when delivering a parcel, the delivery personnel reads data such as a bar code mounted on the parcel or data stored in a transponder, in particular by means of a bar code reader or a transponder reader. This process identifies the delivered object. When transferring the parcel to be delivered, and as regards the mobile acquisition devices of the present state of the art, receipt will be confirmed by the recipient by signing on a pressure-sensitive display. Thereupon the digitized graphic data relating to this signature are stored and then archived in data processing equipment of the delivery enterprise as proof if needed of delivery.

The known mobile data acquisition devices however incur the drawback in the first place of fairly high complexity in storing the digitized graphic data of the recipient's signature, and that the

processing of deliveries, which frequently run to six or seven figures a year, shall significantly load the delivery enterprise's data processing equipment. Another difficulty concerning the mobile data acquisition devices is that the actual recipient identification does not take place at object delivery, but only the comparison of signature with the digital data of the signature provided at delivery can be subsequently carried out. Manifestly it is impossible to store all signatures of potential addressees and to compare them with the signature offered at delivery. There follows some uncertainty at delivery whether the person accepting the object is actually its addressee. Moreover the digitized signature at the present time lacks legal recognition.

In light of the above prior art, it is an objective of the present invention to create a mobile data acquisition device which shall put little load on subsequent data processing equipment while allowing recipient identification already during delivery of the objects being transferred.

The above problem is solved in a first disclosure of the present invention in that the input system is designed as a reader for machine-readable recipient identification. Because the mobile data acquisition of the device of the invention may be fitted with means reading machine readable identifications such as are available in various forms to almost every natural person in the Western industrialized nations, the expense incurred for data acting as proof of delivery may be substantially reduced because now requiring no graphics data, but

only clear text data. Moreover machine readable identification allowing identifying the recipient on the spot, then, that when the addressee and the person taking the object are the same, only that information need be stored which relates to the object having been delivered to the identified addressee. Lastly various machine readable identifications meet the legal requirements set on identification and therefore are legally valid.

The acquisition device of the first disclosure of the invention supports the transfer process during collection/pickup, transportation, storage and delivery of boxing, wares and goods inclusive parcels, furthermore letters, written communications and other news.

In a first advantageous embodiment of the mobile data acquisition device of the invention, the reader reads magnetic cards, chip cards or transponders. At least as regards the Western industrialized countries, a high proportion of the people that are potential recipients carry magnetic cards, chip-cards/smart-cards or transponders enabling identification. These machine-readable identification are used by their owners within the scope of their business with banks, credit card enterprises and in the future in the form of ID chip cards for identification using the internet, as a driver licence or personal identification with digital signature.

A number of current machine readable identifications to prevent misuse are operative only in conjunction with the input of a personal identification code. In order to exploit this additional security

also in the mobile data acquisition device of the invention, said device provides an input system to enter a personal identification code.

The above-mentioned widely used machine readable identifications are frequently used for electronic payments. In particular as regards the delivery of COD parcels, the mobile data acquisition device of the invention may be designed in an especially practical application in that it comprises a data processing unit to implement electronic payment. The identification code in the sense of the present invention includes not only a numerical or letter code entered through a keypad but also biometric information provided by the recipient at delivery. This corroboration of identification using biometric information is already presently available to compare finger prints, facial features, timbre traits or features of the human eye and presumable genetic traits, namely the so-called biological bar code, may be checked in the future.

The above cited biometric identification codes may be used on one hand merely in that an ID chip card implements the identification if positive biometric identification takes place for instance upon applying a finger on a fingerprint sensor on the card. In such case therefore a personal identification code is used in the machine readable data. As a result subsequent and complex management takes are not needed.

Another approach is to store the identification code by means of the mobile data acquisition device in a central databank which

serves illustratively to prevent unauthorized use or to demand further information where high value transfers are involved. For that purpose the procedure-specific data may be illustratively prestored in the mobile data acquisition device or be radio-transmitted to it.

Because implementation of electronic payment in part of the systems depends on data comparison with a data processing facility at the related financial institution, advantageously a mobile radio unit shall be contained in the mobile data acquisition device of the invention for the purpose of connecting it to said data processing facility. This mobile radio unit furthermore may be used by the delivery personnel to communicate for instance with the delivery enterprise.

Following proof of delivery to an identified recipient, it may still be appropriate or advantageous to provide proof of site of delivery. For that purpose the mobile data acquisition device of the invention is also characterized by a further site-locating unit.

To preclude mandatory connection at each delivery between the mobile data acquisition device of the invention and the said delivery enterprise, advantageously said device shall also include a memory to store in particular identification-specific data.

In an especially advantageous design of said mobile data acquisition device regarding data transmission from it to a central unit and securing its power supply, said device is fitted with a mechanical/electrical interface for connection to a data exchange station and/or remote control.

To make easier passing from conventional data acquisition devices of the state of the art to one of the invention, the latter in some circumstances may be advantageously fitted with an input system designed not only as a reader for machine readable identifications offered by the recipient but furthermore offering heretofore known functions, namely a pressure-sensitive display to record client's signature.

A second disclosure of the present invention relates to an accessory module for a mobile data acquisition device used in deliveries. The above discussed objectives of the invention are met for such an accessory module by said second disclosure in that said module comprises a reader for recipient machine readable identifications and an interface which is appropriate for said communicating with said device's input system.

Such an accessory module of the second disclosure of the invention offers investment protection for the operational deliveries data acquisition devices of the past, present and future not yet implementing the present invention. Application of an accessory module of the second disclosure of the present invention allows attaining its advantages in that the machine readable reader's acquired identifications are transmitted through an interface, for instance of the infrared or radio type, to a matched mobile delivery acquisition device. Obviously too the accessory module of the second disclosure of the invention may also be advantageously developed further with respect

to the mobile data acquisition device in the light of the designs described in relation to the first disclosure.

A number of ways are open to design and further develop the mobile deliveries data acquisition device of the first disclosure of the invention and the accessory module for a mobile data acquisition device of the second disclosure of the invention. Illustratively such features are stated on one hand in the claims dependent on claim 1 and on the other hand in the description of an illustrative embodiment in relation to the drawing.

The drawing shows in perspective the single Figure of an illustrative embodiment of the invention of a mobile data acquisition device used in deliveries.

The illustrative embodiment of the invention of a mobile deliveries data acquisition device shown in the single Figure comprises a housing 1 fitted with a bar code reader 2 for the bar-code fitted objects being delivered and, according to the present invention, with a chip card reader 3 to read a recipient's chip card(s) omitted from the single Figure. Obviously and as already mentioned above, the invention is not restricted to the use of chip cards as machine readable identification. Illustratively a magnetic-strip fitted cash card or a credit card also may be used. Instead of using bar code readers, one may also use for instance scanners or transponder readers. Easily handled scanners for two-dimensional bar codes are already in use today.

When delivering, the delivery personnel as a rule first enters the bar code on the object being delivered by means of the bar code reader 2 into the mobile data acquisition device and then inserts a chip card into a slot 4 of the chip card reader 3, whereupon the recipient is identified for instance using a so-called digital signature.

Depending on the chip card system being used, recipient identification additionally may require entering a personal identification code using a typically numeric input unit 5.

To make delivery easy for the delivery personnel, the embodiment of a mobile data acquisition device of the invention comprises a display 6 allowing reading for instance recipient identity confirmation. Depending on the state of the art or applicability, this display may be an LCD screen or touch screen as in present-day so-called palmtops. In such a case the input keyboard could be optionally eliminated and inputs could be entered using a write pen or finger pressure.

The single Figure does not show that the illustrative embodiment of a mobile data acquisition device of the invention includes a data processing unit to execute electronic payments. As regards the so-called cash card system, this omitted data processing unit for instance may execute the electronic payment autarkically, that is without entailing a connection to a central data processing equipment (such as relate to gas stations, customer cards, credit cards etc).

Depending on circumstance, the generation of paper receipts also may be eliminated.

In case payment takes place through a so-called credit card system, it will be necessary in general to compare the data with those of a central data processing facility in order to attain payment confirmation. To attain this connection to a central data processing facility, the illustrative embodiment shown in the single Figure includes a mobile radio unit comprising a transmitter 7 to form a mobile radio network. This mobile radio unit moreover comprises a microphone 8 and a loudspeaker 9, and consequently the said illustrative embodiment of a mobile data acquisition device of the invention also allows remote voice communication.

In order to find the place of delivery for the illustrative embodiment of the mobile data acquisition device of the invention and to consummate this delivery, said device includes a locating system which in this case is a so-called global positioning system (GPS) not explicitly shown in the single Figure. By means of this locating system, the mobile data acquisition device of the invention is able to retain the site of delivery and to store it in a data memory (also omitted), together with the identification specific data.

Lastly the illustrative embodiment shown in the single Figure includes a mechanical/electrical interface, not shown in particular, namely a so-called Cradle interface, to set up communication with a data exchange and/or remote control by means of which the mobile data

acquisition device is connected for instance inside the delivery vehicle. A wireless interface, for instance an infrared interface, may also be used exclusively for data exchange.

The invention relates to a mobile multi-function data acquisition device for delivery of wares and/or cashless money transaction between generally different legal entities (risk transfer).

The data acquisition device identifies the wares by detecting the apposed bar code or the transponder by means of an integrated scanner. The recipient identifying data are secured by detecting the digital recipient signature of his/her chip card using an integrated chip card reader. Recipient's authority to use the card is ascertained by checking his/her pin code entered on the integrated keypad, or the numerical input at the LCD using a writing pen or by directly touching a touch screen. The said device's chip card reader also is able to read a credit cards, a cash card, etc. The procedure need not be backed by evidence because already reading the digital signature of these cards or of an additional signature card. The stored data may be transmitted by radio selectively immediately or following collection/storage by several procedures. Alternatively the transmission of a so-called Cradle can be executed in the batch method.